

Serial No.: 10/696,551
Atty. Docket No.: P66483US1

IN THE SPECIFICATION:

Please amend the paragraph beginning at page 63, line 3,
as follows:

--Once the plate 200 is in its full down position with all contact or stabilizing nipples 230 in contact with their respective eggs, a gripper ring 212 in each hole 202 is pneumatically expanded to grip and hold the injectors 204 rigidly in plate 200 with the contact nipples 230 seated on the egg shell surface. The needle assemblies 206 are then actuated to extend needles 208 a predetermined distance with sufficient ~~force~~ velocity to penetrate the egg shell. The needles 208 continue through the opening in the egg shells to an injecting position. Fluid is delivered to each egg via one of the needles 208. Since all of the injectors 204 are the same and the nipple 230 of each is in surface contact with the egg, each egg is injected to the same depth. Following fluid delivery, the needle assemblies 206 carrying needles 208 are retracted, and injectors 204 are then picked up during upward movement of the support plate as it returns along with the injectors 204 back to the up, or "home," position above the eggs in the tray 168.--

Serial No.: 10/696,551
Atty. Docket No.: P66483US1

Please amend the paragraph beginning at page 79, line 3,
as follows:

--The gripper ring 212 is made of rubber or other suitable elastomeric material and includes a top ring seal 346, a bottom ring seal 348, and a center gripping cylinder 350 connecting the top and bottom ring seals. The ring seals 346 and 348 seat snugly in the respective grooves 338 and 337 of the upper half-plate 300 and corresponding bottom half-plate 302 so that the gripping cylinder 350 forms the inner wall of each opening 202. The inside diameter of gripping cylinders 350 is slightly larger than the outer diameter of the injectors 204 mounted to provide clearance so that the injectors 204 are free to move vertically in each hole 202 when the gripper rings 212 are in their relaxed condition. When pneumatic pressure is applied to the air flow path 340 through air inlet 342, the air pressure is communicated to each of the gripper rings 212, causing the gripping cylinders 350 to expand out into the holes 202 and press against the outside wall of injectors 204 to hold each individual injector 204 firmly in its vertically assumed position.--

Please amend the paragraph beginning at page 88, line 17,
as follows:

Serial No.: 10/696,551
Atty. Docket No.: P66483US1

--Once the injectors 204 are locked in position in plate 200, the needle assembly 206 with the piston 388 is activated by pressurized air fed to the upper side of chamber 382 through air connector 405, channel 402 and port 386. The air delivery tubes are all as short as possible and from opposed outlets deliver air to the chambers 382 at opposite ends of each row of injectors 204. All of the injectors 204 in the row are connected in series. This configuration evenly distributes line pressure and enables all the injection needle assemblies 206 to move downwardly with the needles 208 extending substantially at the same time. As the assemblies 206 move downwardly, the needles 208 extend out of the injectors 204 a predetermined distance and with sufficient ~~force~~ velocity to cause the beveled tip 368 of the needle to shear through the egg shell. The needle 208 continues through the opening in the egg shell to the injecting location or region. The distance the needle tip 368 moves is determined by the stroke length of the piston 388 in the chamber 382. The needle assembly 206 bottoms out and the needle 208 reaches maximum extension, when the lower retaining ring 396 engages the top surface 397 of the lower body component 376. As shown in Figure 24, the needle 208 is close to its fully extended position. When needle 208 is fully extended, fluid is injected into the egg through the needle tip 368. After

Serial No.: 10/696,551
Atty. Docket No.: P66483US1

injection, air pressure is applied to the underneath side of the piston 388 through air inlet connector 403, channel 401 and port 384 to move the needle assembly 206 upwardly, thus retracting the needle 208 back into cylindrical bore 406 and needle tip 368 into opening 416. The upstroke is completed when the upper retaining ring 396 engages the top wall 399 defining chamber 382, as shown in Figure 23.--

Please amend the paragraph beginning at page 95, line 3, follows:

--An alternate preferred embodiment of the fluid delivery assembly is schematically shown in Figures 29 through 33 and is generally designated by reference numeral 500. The assembly 500 is a high precision vaccine delivery system and includes a valve distribution manifold, generally designated by reference numeral 502. The manifold 502 has a forwardly extending ledge 504 having a series of vaccine delivery ports 506 extending from a lower surface thereof and an upstanding rear section 508 which defines an elongated vaccine delivery chamber 510 that extends substantially the entire length of the manifold 502. Mounted on the upper side of the forwardly extending ledge 504 is a pneumatic valve receiving plate 512 which holds a series of pneumatic valve elements 514 in

Serial No.: 10/696,551
Atty. Docket No.: P66483US1

position in respective valve chambers 516 defined by the mating lower surface 513 of the pneumatic valve receiving plate 512 and upper surface 505 of the forwardly extending ledge 504 to form a series of pneumatic valves, generally designated by reference numeral 517. Mounted above the pneumatic valve receiving plate 512 is an elongated high pressure air manifold 518 which defines an elongated high pressure air chamber 520. The chamber 520 communicates with the upper surface of each of the respective pneumatic valve elements 514 through respective holes 522 in the pneumatic valve receiving plate 512.--

Please amend the paragraph beginning at page 99, line 19, as follows:

--The inlet end of the distribution manifold 502 has an extension 546 which includes a vaccine inlet and defines the upper section of a vaccine receiving valve, generally designated by reference numeral 548. The lower section 550 of the vaccine receiving valve 548 is attached to the underneath surface of the extension 546 and sandwiches a pneumatic valve 552 therebetween. When pneumatic pressure is applied to the underneath surface of the pneumatic valve 552 through opening ~~554~~ 553 in lower section 550, the upper surface of the valve 552 is pressed against the mating

Serial No.: 10/696,551
Atty. Docket No.: P66483US1

frustoconical surface inside extension 546 and prevents vaccine or other fluid from flowing through the inlet of the receiving valve 548 into the vaccine delivery chamber 510.--

Please amend the paragraph beginning at page 100, line 7, as follows:

--Mounted on the opposite end of the distribution manifold 502 from the vaccine receiving valve 548 is a vaccine purging valve 554. The vaccine ~~distribution manifold 502~~ delivery assembly 500 is tilted at a slight angle from the horizontal so that the vaccine purging valve 554 is mounted above and in fluid communication with the highest elevation of the vaccine delivery chamber 510. The vaccine purging valve 554 includes an upper housing 556 which sandwiches a pneumatic valve 558 in a corresponding opening in the upper surface of the distribution upstanding rear section 508. The pneumatic valve 558 is normally pressurized to a closed position with its frustoconical lower surface engaging the opposed mating surface in the upstanding rear section 508 by pneumatic pressure fed through the vaccine purging valve upper section 556. When the operator desires to purge any air accumulation in the vaccine delivery chamber 510, which will accumulate adjacent the pneumatic valve 558 due to the tilting of

Serial No.: 10/696,551
Atty. Docket No.: P66483US1

the manifold 502, the vaccine purging valve 554 is activated to release pneumatic pressure against the pneumatic valve 558 and allow air and vaccine to exit through purging port 560.--

On page 104, please amend the paragraph beginning on line 8, as follows:

--An alternate preferred embodiment of the fluid delivery assembly in accordance with the present invention is schematically shown in FIGS. 48 through 50 and is generally designated by reference numeral 900. The assembly 900 is another high precision vaccine delivery system (HPVDS) which has been found to be even more accurate and versatile than the previously described HPVDS 500. The HPVDS 900 includes an elongated main body section or valve body, generally designated by reference numeral 902, and front and back low pressure/vacuum manifold and high pressure manifold, generally designated by reference numerals 904 and 906, respectively, which are secured into mating side cutouts 905 and 907 ~~secured into~~ in valve body 902. A top cover, generally designated by reference numeral 908, is matingly secured to the top of the valve body 902. The valve body 902, manifolds 904 and 906 and top cover 908 are all preferably made of an inert polymer material, such as acetal homopolymer (Delran®, manufactured by

Serial No.: 10/696,551
Atty. Docket No.: P66483US1

DuPont), PVC or the like or stainless steel or other suitable material. The manifolds 904 and 906 and top cover 908 are tightly secured in place to the valve body 902 by any suitable fastening elements, such as machine screws (not shown) in holes 909, or the like, or even bonded together by glue or the like.--